



# Interoffice Memorandum 5a

To: Gerald Sneddon  
Copies To: Charles F. White  
Ed Drill

File Reference:

Date: September 8, 1975

From: Myrlon E. Kelly *M.E.K.*

Department: Environmental Services

Location: C. F. White Plant

Subject: AREAS SUBJECT TO ENVIRONMENTAL IMPROVEMENT

The discussion presented below amplifies environmental items presented on the attached outline. This information is presented to direct our thinking toward those areas which at present contribute emissions either above, or potentially above the quantities allowed by regulatory agencies.

## AIR - Scrubbers

There are three areas which require attention before we can specifically define the efficiency of our present scrubber equipment. First, we need to install appropriate flow and pressure measuring and transmitting devices on the scrubbers so that our operators will have a means of determining when these units are performing according to specification. Second, we must provide log sheets for recording scrubber operating data and train the operators to recognize the importance of ensuring proper scrubber operation. Third, in both the rock processing and chemical plant our scrubbers suffer from inadequate water supply. It appears that in both plants we will have to install additional pump capacity in order to provide the scrubbers with the water flow they require for efficient performance.

At least two of our plant scrubbers require study and remedial action on a priority basis. One of these is the rock drier scrubber which is, at present, emitting phosphate rock particulate in amounts exceeding the appropriate standard. We do not know definitely at this time whether the faulty performance is due to inadequate water supply, or whether with the present increased throughput, additional scrubber sprays may have to be installed in this unit.

Stack tests recently made by Valentine, Fisher and Tomlinson indicate very low emissions from the ROP set belt scrubber. The low indicated emissions are due, however, to the fact that most of the fluorides generated in the ROP manufacturing process are emitted at the discharge end of the set belt without being pulled into the scrubber. It is very likely that study will indicate the need for installation of a second scrubber to adequately contain these emissions. Proper containment of fluoride at this point is not only necessary from an environmental standpoint, but at present it is physically impossible for operating personnel to function in this area due to excessive fluoride fume exposure.

Other scrubbers which ultimately will require study and possible up-grading include those installed on the south calciner, Phosphoric Acid Plant, DAP, Curing Building and TSP Dryer.



The TSP production area contributes major amounts of fugitive dust. The principle portion of this dust is generated in the screening operation; which, at present, vents directly through the roof and into the atmosphere. This is considered a priority control area and it will require the installation of a new baghouse.

There are many other fugitive dust generating points within the plant which will ultimately require attention, but which are not considered to be as serious at this time as those specifically mentioned above. These include transfer points in the SP belt system, calciner buildings, the general area surrounding the calciner buildings, the ground rock feeder in the ROP manufacturing building, DAP screening and transfer system, transfer point in the south grinding building and in the El Paso reclaim building. In most instances a consistently applied maintenance program would minimize dust emissions from these sources. The major exception is the general area surrounding the calciner buildings which is covered with several inches of fine phosphate rock dust. During periods of moderate to high winds this dust becomes airborne and then becomes a significant contributor to the fugitive dust problem. It is likely that in addition to spillage containment we will have to spray these areas with some type of dust retaining emulsion.

#### AIR - SO<sub>2</sub>:

At present we are operating under three sulfur dioxide limitations. The east plant is limited to 4-lbs. of SO<sub>2</sub> emitted per ton of sulfuric acid produced; the west plant to 27-lbs. of SO<sub>2</sub>/ton of sulfuric acid produced; and we have a combined total SO<sub>2</sub> emissions limitation of 27,000 lbs/day. The latter two emission limitations consistently force us to reduce production rates in the West Sulfuric Acid Plant. This production curtailment becomes increasingly restrictive as the time interval following a plant turnaround increases. The best yearly average production rate we can maintain at this plant is approximately 750 tons per day--ranging from 900 tons per day immediately following a turnaround to about 550 tons per day immediately preceding turnaround. In view of the increased sulfuric acid demand called for by the Phosphoric Acid plant productive capacity, this creates a serious imbalance in our sulfuric acid supply. Further, because of the high SO<sub>2</sub> emission level from the West Sulfuric Acid Plant, we are constantly walking a tightrope to avoid violation of one or more of the emission regulations.

It is recommended that priority consideration be given to equipping the West Sulfuric Acid Plant with an ammonia scrubbing system. With such a system in operation we will, barring malfunctions, eliminate any problems with SO<sub>2</sub> emission levels and will increase the productive capability of the west plant to the point that it should be able to average 900 - 1,000 tons per day of sulfuric acid.

#### WATER:

For some time our well and stream monitoring activities have indicated that substantial amounts of plant process water are escaping into the underground water table. Some remedial steps, such as the lining of the south half of the No. 3 Gypsum Slurry Pond, are already in progress. However, the possibility for serious environmental difficulties from other water leakage sources is a matter of great concern.



WATER - Tailings Pond:

For the past two years it has been necessary during the winter months to decant water from the rock processing tailings pond. This water is not highly contaminated, but it is a process water and as such cannot be discharged to the ground. Perhaps the most serious consequence of this repeated diversion of water would be that we could come under the provisions of the NPDES (National Pollution Discharge Elimination System). In such an event we would be subject to the full gamut of testing, controls, and surveillance outlined in the water quality provisions of the EPA regulations.

A report issued by Mr. Gerald Sternad of Arthur G. McKee Company indicates that with proper fresh water control the tailings pond system could be brought into balance. It is recommended that immediate attention be given to resolving this supply-demand situation so that further decanting of water from the tailings pond will not be required.

WATER - Gypsum Storage Ponds:

Provision for storage of our gypsum in adequately lined ponds will remain a long-term problem. The south half of the No. 3 gypsum pond now being lined will provide storage for two years. Therefore, in the summer of 1977 we will be required to line the north half of the No. 3 gypsum pond. In subsequent years additional lifts can be made in this pond so that only additional sidewall lining will be required.

WATER - Cooling Pond:

Several times in the past three years major leaks have developed in the bottom of the cooling pond. Analysis of well water adjacent to the ponds indicates that some contaminated process water is still percolating into the underground water system from this source. Further, the water level in the pond is now above a number of known, observed breaks in the pond lining. It is unlikely that we will be able to lower the water level below these breaks in the future.

It will be several months following the diversion of our gypsum slurry water into the No. 3 pond before we can determine the contribution of cooling pond water to well contamination. It is highly likely, however, that as soon as the weather permits in 1976 we will be forced to take measures to control leakage from this pond. The simplest solution may be to excavate and line the No. 2 gypsum pond and use it as a cooling pond while the present cooling pond is being drained and repaired.

WATER - Wells:

Three of the existing five plant wells show substantial contamination levels. In addition, we have been advised that the J. R. Simplot Company wells located south and west of the pond area are also highly contaminated. The J. R. Simplot Company has notified us that should problems arise due to their use of contaminated process water, they would expect us to provide them with a new water supply. Contamination of the Ammonia Plant well is causing serious problems with the Ammonia Plant water treating system in that these units were not designed to properly treat this quality



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of water. These situations amply demonstrate that aside from the potential action of regulatory agencies our own self interest demands that we embark on a program to adequately contain all of our process waters.

WATER - Plant Drainage:

Another source of underground water contamination stems from the drainage ditches in the chemical plant area which accumulate and channel various spills and waste water flows into the so called "Lewis Lake area" west of the dry products storage building. This highly contaminated water discharges underground through various fissures and channels in the underlying lava formation. It thus has almost direct access to the underground water table. It is imperative that we upgrade our plant drainage system and divert this water into a collection sump where it can be pumped into the gypsum pond.

This memo summarizes air and water pollution problems stemming from operation of the Conda Complex. Resolution of these problems will not be easy, or inexpensive, or immediate. However, prompt, adequate and sustained attention must be given to these problem areas if the Conda Complex is to remain in operation.

MEK/bh



## ENVIRONMENTALLY SENSITIVE AREAS

### I - AIR

#### A. - Scrubbers

- \*1. Require measurement devices
- \*2. Operator training - log sheets
- \*3. Provision for adequate water supply
- 4. Up-grading for improved performance
  - \*a. Rock drier
  - b. South calciner
  - c. Phosphoric acid
  - d. DAP
  - \*e. ROP set belt
  - f. Curing building
  - g. TSP drier

#### B. Baghouses - Cyclones

- \*1. Operator training
- \*2. 4,000-ton bin cyclone

#### C. Fugitive Dust

- \*1. Plant roads
- \*2. RC belt transfer points
- 3. SB belt transfer points
- 4. Belt covers
- 5. Calciner buildings
  - a. Feed chutes
  - b. Leaking ducts, blower housings, etc.
  - c. Transfer points
  - d. General area
- \*6. Product shipping
- 7. TSP
  - \*a. Hammer screens
  - b. Granulator feed belt & fines return
- 8. ROP ground rock feeder
- 9. DAP screens and transfer points
- 10. South grinding building
  - a. South 60 TPH ball mill feed belt & transfer
  - b. Feed belt to airveyor system
- 11. Transfer points in El. Paso Reclaim building



\*D. SO<sub>2</sub>

1. West plant emissions
2. Production curtailment
3. Ammonia scrubbing

II. - WATER

- A. Tailings Pond
- B. Gypsum storage ponds
- C. Cooling pond
- D. Wells
- \*E. Plant drainage

\*Indicates priority items



In particular, the curing building scrubbers require provision for heating the intake air or scrubber water to prevent freezing of these units in the winter.

The Phosphoric Acid Plant scrubbers appear to have inadequate draft to properly remove fluoride fumes from the reactors and the filter deck. A detailed study of this area will have to be made to arrive at the best cost/benefit approach to resolving this problem.

#### AIR - Baghouses - Cyclones:

The plant is equipped with a number of baghouses which operate very efficiently when they are properly maintained. A program will have to be instituted to provide for frequent visual checks of these units to ensure that undetected bag breakage does not permit excessive dust emissions.

As part of the plant emission compliance schedule, the calcined rock transfer point at the top of the 4,000-ton storage bin was equipped with a high efficiency cyclone. For various reasons this cyclone has not been operational for more than a few hours in the past year. This unit controls one of our most significant fugitive dust emission points. Immediate adequate maintenance attention needs to be given to this unit to place it in sustained operating condition so that we can determine whether or not the installed cyclone is adequate to control dust at this point.

#### AIR - Fugitive Dust:

There are a number of uncontrolled or inadequately controlled fugitive dust generation points throughout the plant. Those which were judged to require priority study and remedial action include the major plant roads, the RC belt transfer points, the dry products shipping area and the TSP screening area.

Due to the high traffic volume over the major roads in the plant, these have become substantial sources of fugitive dust. Through spillage, many of the plant roads have become coated with fertilizer materials. As a result, the dust originating from these roads is a potential source of soluble fluorides and can be a contributor to the high vegetation fluoride levels we are experiencing adjacent to the plant.

There are a number of transfer points on the RC belt system which contribute undue amounts of fugitive dust. It is possible that dust at some of these points could be ducted into existing scrubbers or baghouses. In other instances, however, adequate control will require the installation of new equipment.

Large volumes of relatively high fluoride content dust are generated in our Dry Products Shipping area. The Shipping Building is equipped with two baghouses, one for the control of dust generated by DAP shipping operations and another for control of dust generated from TSP shipping operations. However, neither of these units are functioning at the present time. A detailed study will have to be made to see if these units can be made operational and if so, if they will then be adequate to control the dust problem in this area.



*Environmental*  
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September 15, 1975

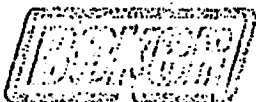
Dr. Lee Stokes  
Administrator, Division of Environment  
Department of Health and Welfare  
Statehouse  
Boise, Idaho 83720

Dear Dr. Stokes:

Baker Industries Corp. is keenly aware of its responsibility to conduct the operation of the Conda complex in a manner which will contribute positively to the enhancement of environmental qualities.

As you are aware, we recently restructured our Conda organization to establish a Department of Environmental Services. This department has now formulated a program to improve ambient air qualities adjacent to the Conda Plant. The various increments of this program are detailed below:

1. We will equip our existing and proposed scrubbers with pressure taps, flow meters, and pressure gauges as may be required to provide continuous information on the status of scrubber operations.
2. We will provide operator training and operator data logs adequate to insure that control equipment is operated at designed conditions.
3. We will institute regular, independent inspections and testing of control devices by the Environmental Services Group with follow-up action as indicated. The testing will include (weather permitting) quarterly tests of emission rates from all plant stacks.
4. Beginning in 1976, we will make more adequate provision for control of fugitive dust generated by vehicular traffic on plant roads. The control measures employed may include oiling, sprinkling, emulsion spraying, or paving as cost/benefit studies dictate.
5. A detailed, continuing study of particulates accumulated on high-volume sampler filters will be instituted to more accurately define the plant contribution to ambient air particulate levels.



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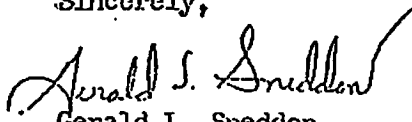
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6. We will either up-grade the existing high-efficiency cyclone on the south calciner rock storage bin to acceptable performance standards or we will replace this unit with a baghouse. This work will be completed by July 1, 1976.
7. Fugitive dust emissions from two problem transfer points on the RC belt system will be ducted to existing scrubbers or baghouses, or new control devices will be provided for these points. This project will be completed by September 1, 1976.
8. We will submit recommendations for improved flouride particulate control in the ROP/TSP manufacturing area for Health and Welfare approval on or before February 1, 1976.

We cannot definitely quantitize the impact of these measures upon total plant emission rates; however, we are anticipating that they will result in a reduction in present ambient air flouride and particulate concentrations of at least 20% and 35% respectively.

We appreciate the cooperation and guidance of your staff in assisting us to meet mutual compatible goals.

Sincerely,

  
Gerald L. Sneddon  
General Manager

Myrlen E. Kelly, Director  
Environmental Services

EG